28. (new) A vaccine formulation comprising an effective amount of the recombinant influenza virus of Claim 4 and a pharmaceutically acceptable carrier.

29. (new) A vaccine formulation comprising an effective amount of the recombinant influenza virus of Claim 5 and a pharmaceutically acceptable carrier.--

REMARKS

Claims 1-19 are presently pending in this application. Claims 6, 9 and 12-19 have been canceled without prejudice to Applicants' rights to pursue the subject matter of these canceled claims in related patent applications. Claims 2, 4 and 5 have been amended and new Claims 20-29 have been added to more particularly point out and distinctly claim the subject matter that Applicants regard as their invention. Thus, upon entry of the above-made amendments, Claims 1-5 and 20-29 will be pending. A courtesy copy of the pending claims, as amended herein, is attached hereto as Exhibit A.

The amendments and new claims are fully supported by the instant application as originally filed, *e.g.*, see the instant specification at page 8, Table 1, and page 10, line 5 to page 12, line 37. Thus, the amendments and new claims do not represent new subject matter.

Applicants respectfully request that the amendments and remarks made herein be entered into the file history of the instant application.

1. THE REJECTIONS UNDER 35 U.S.C. § 112, SECOND PARAGRAPH SHOULD BE WITHDRAWN

Claim 8 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to further limit the claim from which it depends. Applicants have canceled Claim 8, without prejudice. Thus, the Examiner's rejection has been obviated and the rejection should be withdrawn.

2. THE REJECTION UNDER 35 U.S.C. § 102(e) SHOULD BE WITHDRAWN

Claims 1-11 covering recombinant influenza viruses containing tumor antigens, are rejected under 35 U.S.C. § 102(e) as being anticipated by Palese et al., U.S. Patent No. 5,578,473 (the "'473 patent"). This rejection is in error and should be withdrawn.

The Applicants wish to bring to the Examiner's attention that the '473 patent issued from an application that claims priority to application serial no. 08/190,698, filed February 1, 1994, abandoned ("ABN"), which is a continuation of application serial no. 07/925,061, filed August 4, 1992, ABN, which is a division of application serial no. 07/527,237, filed May 22, 1990, U.S. Patent No. 5,166,057 ('057 patent), issued November 24, 1992. The specifications of the '057 and the '473 patent are virtually identical.

The invention as claimed relates to recombinant influenza viruses which have been engineered to express tumor-associated antigens that are recognized by T lymphocytes (Claims 1-5 and 20-25); and their use to "immunize" tumor bearing hosts in order to generate an immune response against the tumor (Claims 26-29). In particular, new Claims 20-25, 28 and 29 are directed to vaccine formulations and recombinant influenza viruses which have been engineered to contain specific tumor antigens that are recognized by T lymphocytes, including melanocyte specific antigens, breast, ovarian, cervical or pancreatic carcinoma antigens.

The Examiner's position is that the '473 patent clearly teaches recombinant negative strand virus RNA templates which may be used to express heterologous gene products and/or construct chimeric viruses. The Applicants are in concurrence with the Examiner as to the broad teachings of the '473 patent. However, the Applicants would like to take this opportunity to clarify that the teachings of the '057 and the '473 patent have indeed been broadly applied to enable rescue of both segmented and non-segmented negative-strand viral genomes, including both replication competent or replication defective chimeric viruses.

The question at hand is whether the prior generic teaching of the '473 patent which broadly covers negative-strand RNA chimeric viruses, anticipates the species of recombinant influenza viruses containing tumor antigens, which are covered by Claims 1-5 and new Claims 20-29. It is well settled that a valid patent may issue from a nonobvious improvement on a prior patented invention; and that a prior genus which does not explicitly disclose a species does not anticipate a later claim to that species. *Corning Glass Works v. Sumitomo Electric U.S.A.*, 868 F.2d 1251, 1261, 9USPQ 2d 1962, 1970 (Fed. Cir. 1989);

Claims 1-5 and new Claims 20-29 cover recombinant influenza viruses that express tumor associated antigens and their use to "immunize" tumor bearing hosts in order to generate an immune response that leads to tumor regression or to prevent tumor formation. This invention is based, in part, on the discovery that recombinant influenza viruses bearing

tumor associated antigens, induce a potent and specific cell-mediated immune response. The immunogenic potential of the recombinant influenza viruses of the present invention is demonstrated, in part, by the working examples presented in the specification. Strikingly, mice immunized with the recombinant influenza virus vectors of the instant invention were able to generate high levels of cytotoxic T lymphocytes against the expressed antigen. (See, the instant specification at page 20, line 30 to page 21, line 35.) Further, treatment with the recombinant influenza virus vectors mediated regression of an experimental established murine model. (See, the instant specification at page 22, line 1 to line 15).

More specifically, Claims 1-5 and new Claims 20-29 relate to recombinant influenza virus vectors containing tumor associated antigens, such as breast, ovarian, cervical and pancreatic carcinoma antigens and melanocyte antigens, including gp100, MART-1/MelanA, TRP-1, Tyrosinase, MAGE-1, MAGE-3, BAGE, GAGE-1, GAGE-2, N-acetylglucosaminyl-transferase, p15, beta-catenin, MUM-1, CDK4, HER-2/neu, human papillomavirus E6 or E7, or Muc-1. These species of heterologous sequences which are tumor associated and recognized by T lymphocytes are not explicitly disclosed by the '473 patent. Thus, the recombinant influenza viral vectors as claimed are not anticipated by the generic teaching of the '473 parent.

Furthermore, the '473 patent contains no recognition of the unique structure and/or unexpected properties of the claimed recombinant influenza viral vectors, containing tumor associated antigens, *i.e.*, their ability to generate a strong T lymphocyte response in a host against the expressed tumor associated antigen, that in part, distinguish the claimed vectors of the instant invention from the generic teaching of the '473 patent. Thus, the '473 patent does not anticipate nor render obvious the claimed viral vectors. *Corning Glass Works v. Sumitomo Electric U.S.A.*, 868 F.2d 1251, 1261, 9 USPQ 2d 1962, 1970 (Fed. Cir. 1989); *In re Baird* , 16 F.3d 380, 29 USPQ 2d 1550 (Fed. Cir. 1994).

In view of the foregoing, the rejection under 35 U.S.C. § 102(e) should be withdrawn.

CONCLUSION

Applicants believe that the application is now in condition for allowance. No new matter has been introduced. An early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

by: Jacqueline Bunn
Reg No. 43,492

Date: November 24, 2000

Laura A. Coruzzi 30,742

Laura A. Coruzzi (Reg. No.)

PENNIE & EDMONDS LLP
1155 Avenue of the Americas
New York, New York 10036-2711
(212) 790-9090

Enclosure